RAPID TRANSIT SERVICE TO SAN FRANCISCO INTERNATIONAL AIRPORT AND TO THE PENINSULA

A Report to the City Planning Commission
by Allan B. Jacobs, Director of Planning

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Background

In 1961 San Mateo County withdrew from the Bay Area Rapid Transit District. This eliminated machinery for the planning and development of new rapid transit facilities to the Peninsula.

By 1964, three years later, San Mateo County officials had reached the conclusion that the transportation situation in the county indicated that there well might be a need for public action to provide mass transit facilities. They sponsored the formation of the West Bay Rapid Transit Authority, created by the State Legislature to renew the preparation of rapid transit plans for the Peninsula, to prepare plans for financing and implementation, and (if voter approval were obtained by 1970) to actually build and operate rapid transit facilities.

The West Bay Rapid Transit Authority legislation provided that San Francisco, San Mateo County, and Santa Clara County can join. So far, only San Mateo County has joined. The Authority has engaged in studies of the feasibility of methods of providing mass transportation in the County, and between it and adjacent counties -- particularly San Francisco.

A number of proposals have been studied, including use of hovercraft, hydrofoil boats, express buses on private rights-of-way, and a subway under El Camino Real. The alternatives that have been under consideration by WBRTA for implementation include:

(a) Extension of the Mission-Daly City BARTD rapid transit line from its terminal at Daly City to the vicinity of San Francisco International Airport or directly to the terminal with present Southern Pacific service continuing;

(b) Extension of the BARTD line from Daly City to San Jose;

(c) Up-grading and improvement of the existing Southern Pacific suburban railway line including the provision of a new downtown terminal;

(d) A county-wide bus system including feeder service to the Daly City BARTD station with possible limited express bus service to downtown San Francisco if preferential highway facilities are available. The S.P. service would remain unchanged;

(e) The continuation of existing transit service.

While San Francisco will have, with the completion of the BARTD system, a first class rapid transit system to the East Bay and serving the southwest part of the City, rapid transit or express transit service serving Marin, the Peninsula, the airport and the southeast Bayshore area within San Francisco will be lacking or at best inadequate.

San Francisco's Interests and Objectives in Peninsula Transportation

San Mateo County's interest in good mass transportation to San Francisco stems largely from the fact that a good share of their employed persons work in San Francisco and would greatly benefit by a fast, convenient, and inexpensive means of getting to and from work.

San Francisco has four main interests and objectives in wanting to help shape the direction of planning for fast, modern, mass transportation from the Peninsula into San Francisco:

(1) To provide a high-capacity means of bringing persons into concentrated central areas for employment, shopping, business, visiting, and entertainment, with a minimum use of land and with a minimum of traffic congestion;

(2) To provide a link in a regional rapid transit system serving the Central Business District, stimulating its orderly development, and helping to shape the direction of its growth and expansion into areas best suited for concentrated CBD uses;

(3) To provide a high-capacity, congestion-free facility for reaching San Francisco International Airport;

(4) To provide mass transportation facilities for the Southeast Bayshore District -- both for employees working there but living outside the City, and for persons living there who would use it in journeys-to-work outside the City, or in other parts of the City.

More detailed statements of these interests and objectives as they relate to San Francisco's existing transit problems and opportunities are contained in the pages that follow.

Problems and Opportunities

(1) The Growth Pattern for the Central Business District:

Despite the presence of numerous sites for new high-rise office structures within the core of the Financial District, there has been an increasing tendency for some to be located on its northern and southern fringes. Expansion of the CBD to the north, however, is circumscribed by topography (Nob Hill, Telegraph Hill, or the existence of specialized land use districts (Chinatown, Jackson Square, North Beach) not necessarily compatible with high-density high-rise office uses.

The South of Market Street area does provide space for expansion of the high-rise office building district. This development is already taking place as the Bechtel Building and the new Pacific Gas & Electric Building take shape. Additional high-density office space will be added as plans for Yerba Buena Center Redevelopment Project are carried out. The blocks between Market and Howard Streets are well within the area of accessibility of the Market Street Subway.

Any additional rapid transit facilities added to the downtown scene, such as a line to the Peninsula, should augment and stimulate this natural southward and westward expansion of the core area, while at the same time providing service as close as possible to the present centers of activity of the Central Business District.

Thus, new transportation facilities should help to shape, positively, the direction of growth of the CBD.

(2) Existing Peninsula Mass Transit Facilities:

The Southern Pacific suburban railway from San Jose to San Francisco is good as far as it goes, but it does not go far enough into San Francisco.

The "Southern Pacific Depot" at Third and Townsend Streets, in San Francisco, is almost one mile south of the destination of 80 percent of its patrons. They disembark in the middle of a warehouse and factory area seven blocks from Market Street and must ride Muni shuttle buses or taxis (or walk) to their destinations north of Market Street.

The need for this shuttle adds at least 20 minutes to the typical commuter's home-to-work journey, and is a reason why many commuters choose to use automobiles.

Peninsula road facilities are now overcongested. The traffic count on James Lick Freeway, 171,000 vehicles per day, is one of the highest in the State, and ten-mile per hour peak-hour speeds are typical.

Although some relief will be afforded by the completion of the Embarcadero-Southern Freeway Extension in 1971, the constant growth of downtown employment in San Francisco, the growth of population in San Mateo and Santa Clara Counties, and of commuting into San Francisco will fill the empty spaces on the road, and the new route will have as much peak-hour traffic as James Lick Freeway has at present.

This all points to the need to provide rapid mass-transit service to the Peninsula.

Greyhound buses provide frequent and convenient service, but running times are slowed by freeway congestion. The Southern Pacific service is good in peak-hours, but infrequent in between, with long waits when a train is missed, which convinces the commuter using an off-peak train that next time he should bring his car.

Thus, a service directly to downtown San Francisco with fast and frequent service is a prime need for by-passing and hopefully reducing peak-hour freeway congestion.

(3) Access to San Francisco International Airport:

Congestion on freeways greatly reduces accessibility to San Francisco International Airport. Air travelers must provide large time allowances for peak-hour traffic congestion and delays. In off-peak hours, 25 minutes is adequate time for a bus, taxi, or auto trip from downtown to the airport. During peak-hours, those regularly making the trip allow at least an hour.

The report recently completed for the San Francisco Airport Department by Wilbur Smith and Associates predicts that the present annual rate of air passengers (now 12,000,000) will double by 1975 (to 24,000,000). Based on current rates, this will mean 40,000 air passengers will be entering the airport daily in 1975 plus approximately 80,000 non-passengers -- employees, airline crews, business visitors and airport visitors, (or about 15 percent of the number of persons now entering the San Francisco Central Business District daily).

The expected use of "Jumbo Jets" by 1971, which will bring in 300 to 450 passengers per flight compared with 75 to 150 passengers per flight today, may well cause hopeless congestion in and around the airport during periods of heavy arrivals and departures. The Wilbur Smith report states: "If 25 arriving flights can now deplane 2,100 passengers in one hour, putting 1,400 cars on the main exit road, not counting employees vehicles, then a similar 25 flights in the era of the 'Jumbo' could theoretically deplane more than 10,000 persons, and put 6,700 cars on the main exit road in an hour. Since the peak-hours are congested now, the magnitude of the problem is clear."

The picture painted by the consultants points up more and more the need for a high-capacity method of moving air passengers and other airport employees and visitors in and out, independent of vehicular traffic congestion.

(4) Rapid Mass Transportation to Serve the Southeast Bayshore Area:

A major concern of San Francisco in the choice of plans to provide rapid transit are the needs of persons living in or working in the southeast corridor of the City.

If a rapid transit line, or improved suburban rail service traversing the Southeast Bayshore district were to provide service which could be made use

of by its residents and employees it would likewise greatly benefit this area. Contrariwise, if a plan results in the elimination or considerable reduction of mass transportation service to this area, it may suffer.

Rapid Transit facilities through this corridor with station stops being made in the Southeast Bayshore district would:

(a) Provide direct commuter service from Peninsula points and downtown area to industrial plants in the district;

(b) Provide commute service to residents of the area working in San Mateo County, or in the downtown area, (as well as in East Bay industrial areas, by transfer to BARTD trains). Since many residents have blue-collar jobs, and since industrial employment is increasinly located on sites outside of the City, this is important as a district employment stimulant;

(c) Provide improved means of travel to downtown shopping and entertainment districts.

Alternatives for Modern Fast Mass Transportation to the Peninsula and to the Airport:

Two concepts have been put forward for rapid transit to the Peninsula, which could also serve San Francisco International Airport:

(1) The West Bay Rapid Transit Plan for BARTD Extension from Daly City to San Jose;

(2) The West Bay Rapid Transit Plan for up-grading and improving the Southern Pacific suburban railway, including a new downtown terminal.

In addition, there are three plans which provide for rapid transit or fast rail transportation to San Francisco International Airport:

(1) The West Bay Rapid Transit Plan for BARTD Extension from Daly City to the airport;

(2) A proposal to build a General Electric-SAFEGE suspended monorail system from downtown to the airport;

(3) A long-range concept of a Geary-Airport rapid transit line, which would be an extension of a Geary Rapid Transit subway south via Third Street, and on a surface line parallel to the Southern Pacific tracks south of the County Line and ending at the airport.

In the table on page 7, alternative concepts for rapid transit from downtown San Francisco to International Airport are compared as to cost, travel time, distance, frequency, passenger carrying capacity and location of downtown terminal. Data on the Southern Pacific Up-graded plan and BARTD Extension plan were obtained from West Bay Rapid Transit Authority. Data on the General Electric-SAFEGE suspended monorail scheme were obtained from the brochure developed by the proponents. Staff estimates were made for the Geary-Airport Subway via Third Street.

Costs range from an estimated $49,000,000 for the Southern Pacific Up-grading to $300,000,000 for the Geary-Airport Subway. BARTD Extension and SAFEGE monorail would cost about the same -- $97,000,000. The alternative Southern Pacific Up-grading plan involving a subway under Seventh and Mission Streets would cost more, at least $118,000,000.

BARTD could carry the most passengers per hour. Frequency could be at 90-second intervals on BARTD if every train ran to the airport in peak-hours. On the Southern Pacific it probably could be no greater than every 30 minutes in off-peak periods because of the need to use the tracks for freight movements. Peak-hour headways could probably be 15 minutes. The proposed monorail calls for a 5-minute headway in peak periods, and a minimum headway of 15 minutes.

Downtown terminals would all be within the Central Business District. The Southern Pacific terminal, at Second and Market, would be convenient to Financial District destinations, and a direct transfer to BARTD would be possible to reach East Bay points and the Retail and Civic Center districts. The monorail terminal would be at Third and Mission, and proponents visualize a horizontal elevator or moving sidewalk to connect with the Montgomery BARTD-Muni station. The BARTD Extension concept involves the use of Powell Plaza Station as an air terminal, less than a block away from the Hilton Hotel. The alternative Southern Pacific downtown terminal plan -- the Seventh and Minna (or Mission) Subway to First Street -- would serve the Market Street spine, including the Civic Center and Yerba Buena/Retail districts.

Comparison of Alternative Systems of Rapid Service to the Airport:

	Southern Pacific Up-Graded Commute & Airport Service		BARTD Extension to the Airport	General Electric-SAFEGE Monorail	Geary-Airport Subway via Third St.
	Single Downtown Terminal at Second and Market Sts.	Alternative Seventh & Minna Sts. (or Mission) Subway to First St.			
Sources: (see footnote)	(1) & (3)	(3)	(1)	(2)	(3)
Distance to Airport	14.3 mi.	14.5 mi.	16.5 mi.	14.6 mi.	14.2 mi.
Time, downtown to airport:					
(a) Express	18 min.	19 min.	17 min.	14.3 min.	20.0 min.
(b) Local	25 min. (3)	26 min.	22 min. (3)	19.0 min.	28.0 min.
Local Station stops	8	9	8	5	9
Estimated Cost (000's)	$49,000	$118,000	$97,000	$97,000	$300,000
Downtown Terminal:					
Location	Second and Market	Mission, Fourth & Fifth Sts. & 2 other Stations	Powell Plaza Station & Market St. Subway Stations	Third and Mission	Third and Market
Proximity	Financial District	Yerba Buena Center & South	Hotel & Shipping Districts	Yerba Buena Center	Financial District & Union Square
Train Frequency					
(a) Off-Peak	30 min.	30 min.	15 min.	15 min.	10 min.
(b) Peak	15 min.	15 min.	1½ min.	5 min	1½ min.
Passenger Capacity Per Hour					
(a) Off-Peak	560	560	1,680	560	1,800
(b) Peak	2,800	2,800	30,000	2,160	50,000 (standees)
Cars per Train	4-10	4-10	6-10	2-4	6-10

Sources: (see next page)

Sources:

(1) Information provided by West Bay Rapid Transit Authority.

(2) Feasibility Report for Proposed Aerial Transport System Installation between San Francisco International Airport and Downtown San Francisco. Gibbs and Hill, Inc., for General Electric Corp., and Haas and Haynie, November 1967.

(3) Estimates by Staff of Department of City Planning.

Detailed Description of Alternate Proposals for Rapid Transit to the Peninsula and to the Airport:

(1) BARTD Extensions:

West Bay Rapid Transit Authority is now considering two alternative concepts, which would have a common route as far as the airport:

(a) BARTD Extension to the airport, which would cost $79,000,000 for nine miles of route (plus about $18,000,000 for a subway entrance into the airport and BARTD terminal at the Air Passenger Terminal Building);

(b) Extension of the BARTD line to the South County Line near Palo Alto which would cost another $171,000,000, or a total of $250,000,000, plus the $18,000,000 for the airport spur subway and terminal ($268,000,000 altogether). It is proposed that this line be eventually extended to San Jose but no estimate has been made for this last stage.

West Bay would construct the double-track line over which BARTD trains could operate, and lease the trackage to BARTD for operation as an integral part of their Bay Area system. Construction costs would probably be financed by a bond issue backed by property tax revenues, motor vehicle revenues, and anticipated Federal transportation grants.

The route followed is essentially the same as was under consideration by BARTD in 1961:

(a) From Daly City to San Bruno via the right-of-way of a Southern Pacific branch freight line, and the Public Utilities Commission's old "Muni Line 40" right-of-way;

(b) From San Bruno to Burlingame -- P.U.C. Line 40 right-of-way;

(c) From Burlingame south -- on or adjacent to the right-of-way Southern Pacific main line tracks.

At present, BARTD designs for stations and cars do not include any special facilities for handling passengers' baggage. It might be noted, however, that some BARTD cars could be altered to provide for roll-on wheeled baggage containers. Airline waiting rooms could be established adjacent to a centrally-located BARTD station mezzanine, such as at the Powell Street Station, with elevators installed to take baggage directly to the train platform below.

Distance to the airport from Powell Street Station would be about 16.5 miles, and travel time would be about 22 minutes if stops were made at all intervening stations.

In this alternative the Southeast Bayshore District could suffer unless special measures were taken to insure continuation of rail service to the South Bayshore District via Southern Pacific, or the establishment of a shuttle connection with convenient transfer would be essential.

(2) Southern Pacific Up-grading and Improvement:

(a) Train Tunnel to Single Terminal at Second and Market Streets

This concept involves the initial use of the present commuter railway, its tracks, Diesel engines and double-deck gallery cars, but adding a tunnel extension from Third and Townsend to a new downtown terminal located at Second and Market Streets, adjacent to the Montgomery BARTD-Muni Rapid Transit Station.

Total immediate costs for this system would be $31,000,000 for the downtown terminal and train tunnel, and $18,000,000,000 for the airport subway entrance and terminal, or $49,000,000 in all.

Based on running times of present non-stop commuter expresses, it is estimated that 17 minutes would be required for the 14.3 mile distance from Second and Market to the airport. Because of track congestion with competing commuter and freight trains, frequency might be no greater than every 15 minutes during peak-hours, and every 30 minutes during off-peak periods.

The basic advantage of the Second and Market Southern Pacific Up-grading plan is its economy compared to other alternatives, achieved by making a minimum cost addition to an existing operating system. The result could be a complete service pattern to the airport and to all peninsula points, but admittedly a system of limited flexibility and capacity and requiring later additions for rapid transit operating characteristics. This plan would not serve directly the Yerba Buena/Retail area or the Civic Center area if it were later made more of a rapid transit operation.

(b) Southern Pacific Up-Grading and Improvement - An Alternate Plan - Subway under Seventh and Mission Streets

An alternative alignment for the Southern Pacific Up-grading Plan has been studied by the staff of the Department of City Planning. This would involve:

(1) Lowering the Peninsula line tracks at Seventh and Berry Streets into a two-track subway running beneath Seventh Street, Mission or Minna Streets to Fremont Street;

(2) Establishing stations at Seventh and Howard Streets, Yerba Buena Center, and the end-of the-line terminal adjacent to the Transbay Transit Terminal;

(3) The interconnection of stations with corresponding Market Street subway stations by moving sidewalks or "horizontal elevators".

No definitive cost estimates have been made for this Seventh-Mission (Minna) alternate routing of an S.P. Up-grading Plan. However, if current tunneling cost estimates ($1,600 per lineal foot per single track tunnel plus $20,000,000 to $30,000,000 per station) are applied, a rough estimate of approximately $100,000,000 can be arrived at.

The $18,000,000 cost for a spur subway to the airport passenger terminal complex from the mainline S.P. tracks (a cost common to all BARTD and S.P. proposals) would bring the total cost of a link between downtown and the airport, using a Mission-Seventh Subway, to $118,000,000.

The advantages of this Mission (or Minna) Street alignment are that it would:

(a) Stimulate the expansion of the Central Business District south of Market Street;

(b) Provide direct service to an Urban University complex if this is developed in the South of Market area;

(c) Bring Peninsula passengers close to Civic Center, Retail District and Financial District destinations -- rather than merely to the Financial District;

(d) Provide direct service to Yerba Buena Center;

(e) Provide a first installment on the eventual construction of an "East Side" Peninsula regional rapid transit system, which could be compatible with S.P. operations, or separate from and parallel to them and part of the BARTD operations system;

(f) Provide a direct connection to a second transbay under-water transit tube if this were to be built -- either to the East Bay or to Marin or to both; thus it could be utilized as an important link in a future regional system.

(3) General Electric -- SAFEGE Suspended Monorail to the Airport:

A local group has proposed the use of a General Electric-SAFEGE monorail type of system to provide for express downtown-to-airport service from a downtown terminal at Third and Mission Streets to the Air Passenger Terminal Building at the airport.

This is proposed as a public-private partnership arrangement (similar to non-profit garage projects such as Fifth and Mission Garage) whereby the City, or some other public body, provides the land and underwrites the financing, and after capital costs are paid off, the facility would become the property of the public body. It is assumed that revenue from the premium fares ($2.00 or $2.50 one-way -- lower for frequent users -) would pay off the capital costs.

Construction and other capital costs (excluding some financing costs) are estimated at $97,070,000. The route would be 14.6 miles long, and it is claimed that express trains could make the run in 14.3 minutes from downtown to airport. Frequent (5-minute to 15-minute) service would be provided by 2-or 4-car trains.

It is designed to provide service primarily oriented toward the requirements of the air traveler----express service with special baggage service. Only incidental local service is planned for stations serving the Bayshore corridor.

Cars would have rubber-tired wheels over the car body which would run inside of a hollow beamway suspended from pylon towers at least 37 feet high placed about every 100 feet. The towers would be higher than BARTD elevated track structures, and the beamways would be slightly larger than the beams supporting the BARTD tracks.

Preliminary route designs so far put forward appear to have a number of unresolved problems, including:

(a) A number of sharp curves and steep grades, which would seem to detract from the quality of a fast ride;

(b) Use of elevated structures through residential and business districts in the Southeast Bayshore area and within the Yerba Buena Center Redevelopment Project;

(c) An alternate routing, entirely along Third Street, requires two high bridges about 175 feet high to clear the China Basin Channel and Islais Creek Channel.

Use of a continuously-elevated rail system may be contrary to previously stated City policy declarations of the Board of Supervisors, adopted when they were negotiating with BARTD to get the Mission Line underground, and to get the Geary-Post-Marin line underground on outer Geary Boulevard. This elevated design seems to involve inherent problems of design and aesthetics, no matter how it is routed.

The scheme does propose local stations to serve non-airport local travel, and from that standpoint it could have travel-access advantages for the Southeast Bayshore District. (Proponents do not expect, however, that non-airport travel would exceed 10 percent of the total passengers hauled.)

Its uniqueness and non-compatibility with either BARTD or S.P. rail operations is a factor which should be weighed in consideration of a proposal such as the SAFEGE Monorail for inclusion in a region-wide rapid transit system. No through service or interchange of equipment would appear possible, thus restricting system-wide operational flexibility.

Its pioneer position, with no operational prototype except a one-mile test track in France is another point to be considered (although this could be overcome by requirements for construction of demonstration test tracks prior to final decision).

Engineering analyses made in the last three years of proposals to install SAFEGE Monorail in Los Angeles and Manchester, England, have emphasized the need for further testing on a system simulating full-scale operations prior to its actual installation as an operating system. (1)

Heat in tires, switches, excessive sway and roll, reaction of cars when coupled into trains, and testing pre-stressed concrete pylons and beamways were mentioned as needing further testing.

Although the SAFEGE system was found, in the Manchester Study, to be cheaper to build than a BARTD-type elevated rail structure, it was concluded that elevated structures of any type were unacceptable for about one-third of the 16-mile proposed rapid transit line, which was recommended to be in tunnel (more costly for SAFEGE). Higher operating costs were predicted for SAFEGE than for BARTD-type trains. The Manchester study group recommended BARTD-type trains rather than any kind of monorail or other unusual-type rapid transit system -- lower capital costs, lower operating costs, equal performance and comfort, and more thoroughly tested and proven. (2)

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(1) Kaiser Engineers, Skyrail System, Preliminary Engineering Report, Los Angeles Department of Airport, February 1965, Section V, and Manchester Rapid Transit Study, Volume 2, "Study of Rapid Transit Systems and Concepts" prepared by DeLeuw Cather & Partners Associated with Hennessy, Chadwick, O Heocha and Partners for the City of Manchester, the Ministry of Transport and British Railways, August, 1967.

(2) Manchester Rapid Transit Study, Volume 2, "Study of Rapid Transit Systems and Concepts", page 20.

In the San Francisco General Electric-SAFEGE proposal, proponents' feasibility report, and its analysis of potential traffic of air passengers and airport employees and workers which would be attracted to such a system seem plausible, but this same potential passenger attraction could apply equally well to the BARTD or S.P. Up-grading proposals. A disadvantage of the SAFEGE proposal is that if it were built, it might preclude the construction of any other rapid transit improvement for the Peninsula, yet it is designed to serve only a portion of the total passenger demand, -- i.e., the premium fare air passenger traffic.

(4) Geary-Airport Subway via Third Street:

An expensive ($300,000,000) long-range future solution may be provided through extending the Geary Rapid Transit Line (if built) across Market Street and under Third Street to the County Line, serving the Southeast Bayshore District, and then south, parallel to the S.P. tracks.

Although this would be a desirable high-capacity system, its high cost and lengthy design and construction period involved no doubt dictate its being postponed for inclusion as a later stage, long-range project.

If the alternative of BARTD Extension initially only to the airport is chosen, the concept of a Third Street rapid transit line could be part of a second stage BARTD Extension to San Jose. It would be complementary to the BARTD-Daly City line by providing service to the Southeast Bayshore District and providing the additional capacity into the City from the Peninsula which would eventually be necessary. Consideration should be given to using the routing proposed in the Southern Pacific-Seventh and Mission Streets alternative for the south of Market portion of a Third Street rapid transit line.

Advantages and Disadvantages of Rapid Transit Alternatives to the Airport and to the Peninsula:

Following is an assessment of the alternatives presently under consideration in terms of their apparent advantages and disadvantages:

(1) BARTD Extensions:

(a) Advantages:

- Most modern transit facilities, fastest, best amenities, safest, most frequent service, greatest passenger carrying capacity per hour;

- Direct connection to all parts of the Bay Area served by BARTD lines (including the Peninsula if BARTD extended to San Jose);

- Special facilities for air travelers' baggage and tickets possible with modifications made to cars and stations;

(a) Advantages: (continued)

- Best service to west side of San Mateo County and San Francisco (State College, City College, Mission District);

- No major problems of urban aesthetics, since seven miles of existing tunnel and at grade lines are used;

- No more expensive to the airport than SAFEGE Monorail plan and less expensive than S.P. Up-grading (Seventh and Mission subway concept).

(b) Disadvantages:

- If extended to the airport, no service to Southeast Bayshore District, and possible reduction in existing S.P. rail service;

- If extended to San Jose, no service to Southeast Bayshore District, and possible reduction in existing S.P. commute rail service;

- More expensive than the Second and Market single-terminal S.P. Up-grading plan;

- Distance to downtown San Francisco about two miles longer than via S.P. or monorail;

- Changes might have to be made to BARTD cars and stations to provide for airline passenger baggage and tickets.

(2) S.P. Up-grading Plan (Single Terminal at Second and Market and the Alternative Routing Via Seventh and Mission Streets):

This proposal no longer appears feasible and has been dropped from consideration as a viable alternative.

The S.P. has reaffirmed its policy of not wishing to share its two main line freight tracks with airport and Peninsula trains during non-peak commute periods. This together with the California PUC's legal limitations preclude further consideration by WBRTA of a forced S.P. extension to Second and Market Streets and the provision of non-peak period passenger commute service.

(3) General Electric-SAFEGE Monorail from Downtown to Airport:

(a) Advantages:

- Special service specifically designed for downtown-to-airport service;

- Cars and facilities can be designed for baggage check-in and airline ticket confirmation;

- Potential of most modern train controls, etc., equal to BARTD;

- Unusual type ride which would have tourist appeal;

- Could provide service to Southeast Bayshore District, but not as presently planned, and not for large volumes of passengers;

- Might be accomplished quickly.

(b) Disadvantages:

- Special design not compatible with any other rail service; thus, no through service possible, and no chance to get extra cars for use when travel is unusually heavy;

- Continuous elevated structure would cause numerous urban design problems and probably traffic problems on surface streets utilized for support towers;

- Attraction of non-airport travel along the corridor might disrupt existing services, such as the S.P.;

- Would cost as much or more than alternate systems (BARTD or S.P.) which could give equally good service;

- Similar design was decided against by BARTD for its Bay Area system;

- Transfer would be necessary to reach East Bay or lower Peninsula points by BARTD or S.P. It is designed to serve only airport traffic with incidental service to corridor;

- Construction of this line as a single-purpose line to the airport for premium-fare air passengers might preclude the development of rapid transit improvements to serve the suburban and city dweller commuters, shoppers and others desiring to reach the core area.

(4) Geary-Airport Subway Via Third Street:

(a) Advantages:

- Would be an integral part of the City and Regional transit system;

- Would provide comprehensive rapid transit service to the residents of the Southeast Bayshore District;

- Would provide workers with regional and local rapid transit access to industrial jobs in the Corridor;

- Would provide the necessary long-range additional peak period capacity needed if BARTD were extended to San Jose and S.P. ceased commute service;

- Would stimulate new Central Business District development south of Market Street;

- Could provide direct service to the Yerba Buena Center, the proposed Sports-Convention Center and a possible new Urban University complex;

- Could be connected with a future line to Marin or a second tube to the East Bay.

(b) Disadvantages:

- Potentially the most expensive to build;

- A long-range development, prefaced on the construction of a BARTD Extension initially to the airport;

- Revenue may not support operating expenses of the line and the line must be evaluated in conjunction with the social and economic benefits that would accrue to the Southeast Bayshore District.

SUMMARY AND CONCLUSIONS

1. Beyond existing programs and efforts to provide rapid transit via BARTD and upgrading of San Francisco's Municipal Railway facilities, the most urgent need for transit is between San Francisco and the Peninsula, including San Francisco International Airport. Present and future highway congestion, the continued rapid expansion of airport oriented travel, the City's own South Bayshore needs, and anticipated rapid population growth on the Peninsula all point to this.

2. Any transit system planned for this corridor should not only provide for commuter traffic from the Airport and Peninsula, but should also:

   (a) be an integral part of an overall transit system serving the City and region, i.e., it should not be an ad hoc facility but should be a part of or easily adaptable to an overall system;

   (b) provide for and be a tool to achieve the most desired land use development patterns in the Central Business District, the City as a whole and the region;

   (c) serve the South Bayshore district of the City -- its population and job centers -- if at all possible.

3. Of the alternatives explored in this report, the Southern Pacific Up-grading plans would appear to be the cheapest and quickest means of achieving meaningful immediate improvements for Peninsula commuters and airport travelers. However, as indicated earlier, the Southern Pacific has reacted negatively to these proposals and it appears futile to further pursue this alternative. West Bay Rapid Transit Authority officials have set aside further consideration of this plan and the City Planning Department no longer considers S.P. Up-grading feasible and is concentrating its efforts on other alternatives.

4. At this time, the most desirable alternative for providing service to the Airport and the Peninsula would be the BARTD Extension to the Airport. While this does not provide rapid transit service to the Southeast Bayshore District it would allow the limited service provided presently by the S.P. to continue. If a WBRTA-BARTD line from Daly City were to be extended to San Jose this would probably preclude continued S.P. commute service. This would therefore result in near capacity initial usage of the BARTD line limiting the potential for future growth, loss of limited service to the Bayshore District, and the loss of a second direct rail commute line from the Peninsula to the CBD.

4. (continued)

It is therefore proposed that new rapid transit service to the Airport and Peninsula be initially limited to the BARTD Extension to the vicinity of the Airport, and into the Airport via spur or other means, and that long distance Peninsula commute service continue to be provided by the S.P.

The second stage of development should consist of BARTD Extension south from the Airport to San Jose, replacing S.P. service. Concurrent with this extension, an additional BARTD compatible line should be constructed north from the Airport through the Southeast Bayshore to the CBD. This would provide rapid transit service to the Southeast Bayshore as well as providing additional capacity for Airport and Peninsula commuters. The northern end of this line could follow the general routing proposed for the S.P.-Seventh and Mission Streets alternative and eventually be tied into a Geary, Marin, or second East Bay line.

5. This plan concept represents the most promising policy to be pursued by the City at this time, and the City should take the initiative to enter into direct and formal discussions with West Bay Rapid Transit Authority so that joint planning and development of rapid transit can be successfully brought about to serve San Francisco's downtown, its Southeast Bayshore area, its Airport and Peninsula. <u>It is vital that San Francisco participate in the decisions early, decisions which will have crucial effect on its future growth and development</u>. Otherwise, it is possible that major decisions, possibly not in the City's best interests, will be made without San Francisco's participation.

   Such policy plans are necessary to provide a framework for evaulation of proposals which may arise in the future.

6. City policy should also be geared to relating the design of its Airport expansion with the potential of a direct rapid transit link to the Airport from downtown San Francisco. This effort should involve relevant San Francisco and West Bay public agencies.

7. Locational and design criteria for any transit system in the Bayshore corridor are being developed and defined by the Department of City Planning as part of its current work program geared to the development of transportation policy for the City.